STDs in Women and Infants

Public Health Impact

Women and infants disproportionately bear the long term consequences of STDs. Women infected with *Neisseria gonorrhoeae* or *Chlamydia trachomatis* can develop pelvic inflammatory disease (PID), which, in turn, may lead to reproductive system morbidity such as ectopic pregnancy and tubal factor infertility. If not adequately treated, 20% to 40% of women infected with chlamydia[1] and 10% to 40% of women infected with gonorrhea[2] may develop PID. Among women with PID, scarring will cause involuntary infertility in 20%, ectopic pregnancy in 9%, and chronic pelvic pain in 18%.[3] Approximately 70% of chlamydial infections and 50% of gonococcal infections in women are asymptomatic.[4,5,6] These infections are detected primarily through screening programs. The vague symptoms associated with chlamydial and gonococcal PID cause 85% of women to delay seeking medical care, thereby increasing the risk of infertility and ectopic pregnancy.[7] Data from a randomized controlled trial of chlamydia screening in a managed care setting suggest that such screening programs can reduce the incidence of PID by as much as 60%.[8]

Gonorrhea and chlamydia can also result in adverse outcomes of pregnancy, including neonatal ophthalmia and, in the case of chlamydia, neonatal pneumonia. Although topical prophylaxis at delivery is effective for prevention of ophthalmia neonatorum, prevention of neonatal pneumonia requires prenatal detection and treatment.

While the great majority of infections with human papillomavirus (HPV) in women do not cause cervical cancer, infections with HPV are a major concern because persistent infection with specific types (e.g., types 16, 18, 31, 33, 35, and 45), are causally related to cervical cancer; these types also cause Pap smear abnormalities. Other types (e.g., types 6 and 11) cause genital warts, low grade Pap smear abnormalities and, rarely, recurrent respiratory papillomatosis in infants born to infected mothers.[9]

Genital infections with herpes simplex virus have serious consequences for pregnant women including potentially fatal neonatal infections.[10]

When a woman has a syphilis infection during pregnancy, she may transmit the infection to the fetus in utero. This may result in fetal death or an infant born with physical and mental developmental disabilities. Most cases of congenital syphilis are preventable if women are screened for syphilis and treated early during prenatal care.[11]

Observations

- Between 2000 and 2001, the reported case rate of chlamydial infections in women increased from 397.3 to 435.2 per 100,000 females (Figure 5, Table 5). Chlamydia rates exceed gonorrhea rates among women in all states (Figures A and B, Tables 5 and 15).

- In 2001, the median state-specific chlamydia test positivity among 15- to 24-year-old women screened in selected prenatal clinics in 22 states and Puerto Rico was 7.4% (range 3.7% to 13.5%) (Figure F).
- Gonorrhea rates among women were higher than the overall HP 2010 objective of 19.0 cases per 100,000 population[12] in 42 states and two outlying areas in 2001 (Figure B, Table 15). As in previous years, the highest rates of gonorrhea among women in 2001 occurred in the South (Figure B).
- Like chlamydia, gonorrhea is often asymptomatic in women and can only be identified through screening. Large-scale screening programs for gonorrhea in women began in the late 1970s. After an initial increase in cases detected through screening, gonorrhea rates for both women and men declined steadily throughout the 1980s and early 1990s (Figure 12, Tables 15 and 16). The gonorrhea rate for women in 2001 (128.2 per 100,000 females) was similar to the 2000 rate of 126.7 cases per 100,000 females and the 1999 rate of 128.6 cases. The gonorrhea rate among men in 2001 was also similar to the 2000 rate. Men with gonorrhea are usually symptomatic and may seek care; therefore, trends in men may be a relatively good indicator of trends in incidence of disease. As with chlamydia, trends in reported gonorrhea rates among women are more likely to reflect screening practices as well as the actual burden of disease.
- In 2001, the median state-specific gonorrhea test positivity among 15- to 24-year-old women screened in selected prenatal clinics in 16 states was 0.9% (range 0.0% to 4.3%) (Figure G).
- The HP2010 objective for primary and secondary (P&S) syphilis is 0.2 case per 100,000 population. In 2001, 29 states and two outlying areas reported rates of P&S syphilis for women that were greater than 0.2 case per 100,000 population (Figure C, Table 28).
- The HP2010 objective for congenital syphilis is 1.0 case per 100,000 live births. Twenty-seven states and three outlying areas had reported rates higher than this objective in 2001 (Figure D, Tables 41 and 42).
- The rate of congenital syphilis closely follows the trend of P&S syphilis in women (Figure 29). Peaks in congenital syphilis usually occur one year after peaks in P&S syphilis in women. The congenital syphilis rate peaked in 1991 at 107.3 cases per 100,000 live births and has declined by 89.7% to 11.1 cases per 100,000 live births in 2001 (Figure 30, Table 40). The rate of P&S syphilis in women peaked at 17.3 cases per 100,000 females in 1990 and declined 91.9% to 1.4 cases per 100,000 females in 2001 (Figure 29).
- The 2001 reported rate of congenital syphilis for the United States is currently well above the HP2010 objective of 1.0 case per 100,000 live births. This objective is many times greater than the rate of congenital syphilis of most industrialized countries where syphilis and congenital syphilis have nearly been eliminated.[13]
- While most cases of congenital syphilis occur among infants whose mothers have had some prenatal care (Figure E), late or limited prenatal care has been associated with congenital syphilis. Failure of health care providers to adhere to maternal syphilis screening recommendations also may contribute to the occurrence of congenital syphilis.[14]

- Accurate estimates of pelvic inflammatory disease (PID) and tubal factor infertility resulting from gonococcal and chlamydial infections are difficult to obtain. Definitive diagnosis of these conditions can be complex. Trends in hospitalizations for PID have declined steadily throughout the 1980s and early 1990s, but have remained relatively constant from 1995 through 1999 (Figure I). These trends may reflect changes in the etiology of PID (with increasing proportions of more indolent chlamydial infection) as well as changes in the clinical diagnosis and management of PID rather than true trends in disease.[15] A greater proportion of women diagnosed with PID in the 1990s have been treated in outpatient instead of inpatient settings when compared to women diagnosed with PID in the 1980s.
- The reported number of initial visits to physicians' offices for PID through the National Disease and Therapeutic Index (NDTI) has generally declined from 1993 through 1998 but has remained, for the most part, unchanged since 1998 (Figure J). In 2000, an estimated 337,053 cases of PID were diagnosed in emergency departments among women 15- to 44-years of age (National Hospital Ambulatory Medical Care Survey, NCHS).
- Evidence suggests that health care practices associated with ectopic pregnancy changed in the late 1980s and early 1990s. Before that time, treatment of ectopic pregnancy usually required admission to a hospital. Hospitalization statistics were therefore useful for monitoring trends in ectopic pregnancy. Beginning in 1989, hospitalizations for ectopic pregnancy began to decline. The number of reported hospitalizations for ectopic pregnancy remained the same in 2000 compared to the number reported in 1999 (Figure H). Data suggest that nearly half of all ectopic pregnancies are treated on an outpatient basis.[16]

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[13] Division of STD/HIV Prevention. *Healthy People 2000: National Health Promotion and Disease Objectives. Progress Review: Sexually Transmitted Diseases,* October 26, 1994.

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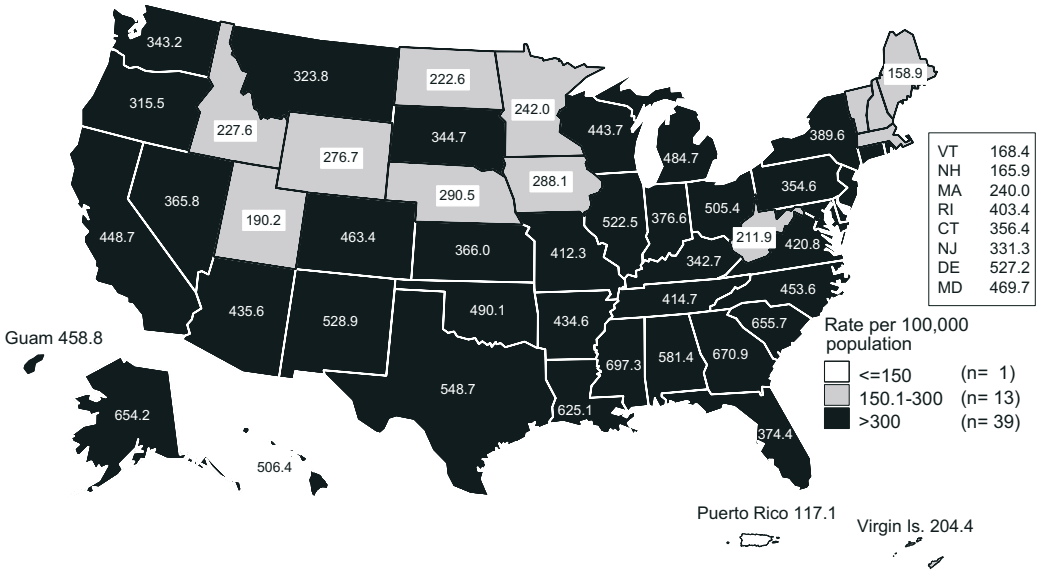
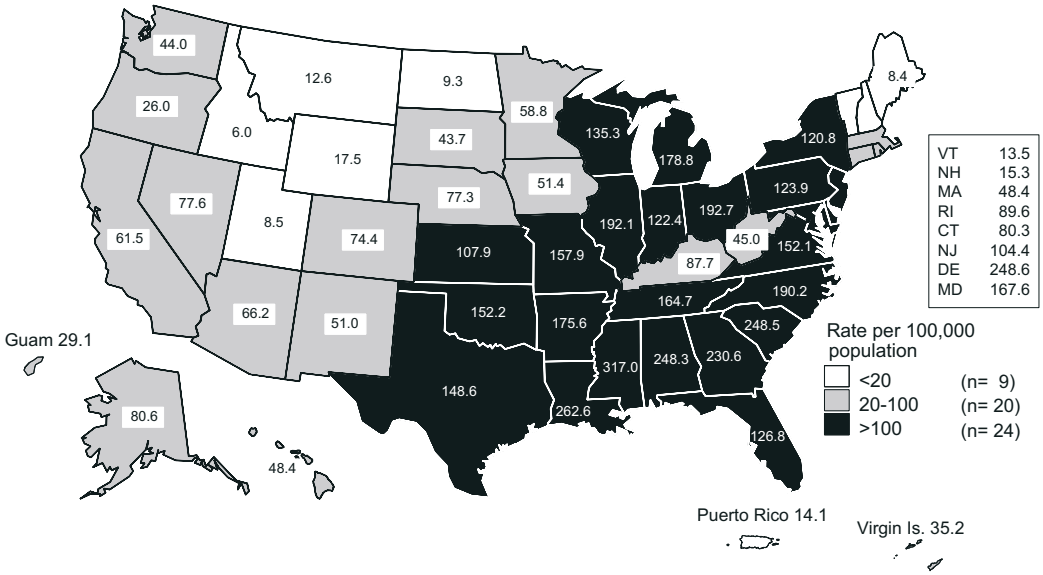
Figure A. Chlamydia — Rates for women by state: United States and outlying areas, 2001



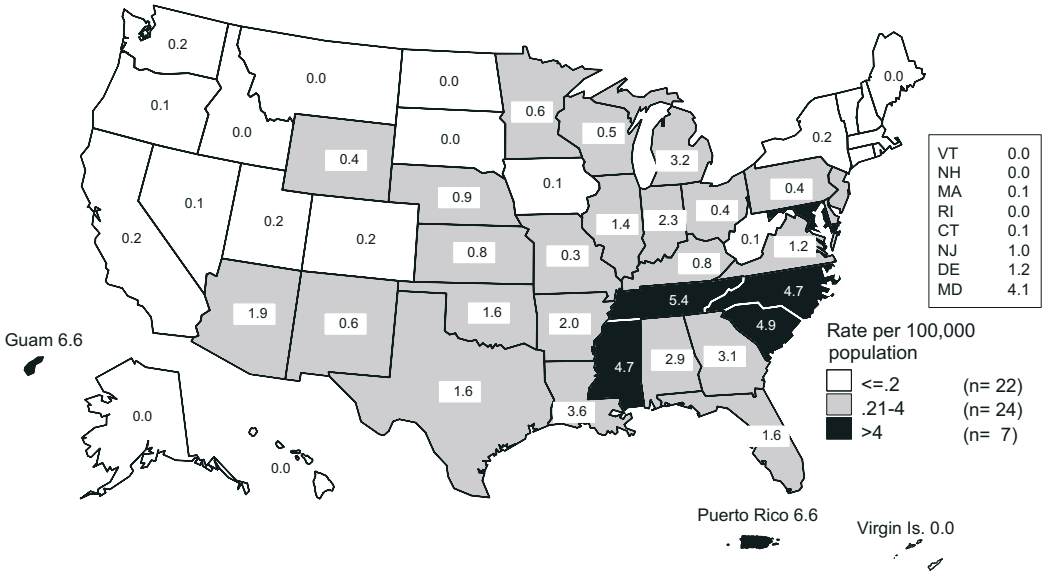
Note: The total rate of chlamydia for women in the United States and outlying areas (including Guam, Puerto Rico and Virgin Islands) was 430.8 per 100,000 population.

Figure B. Gonorrhea — Rates for women by state: United States and outlying areas, 2001



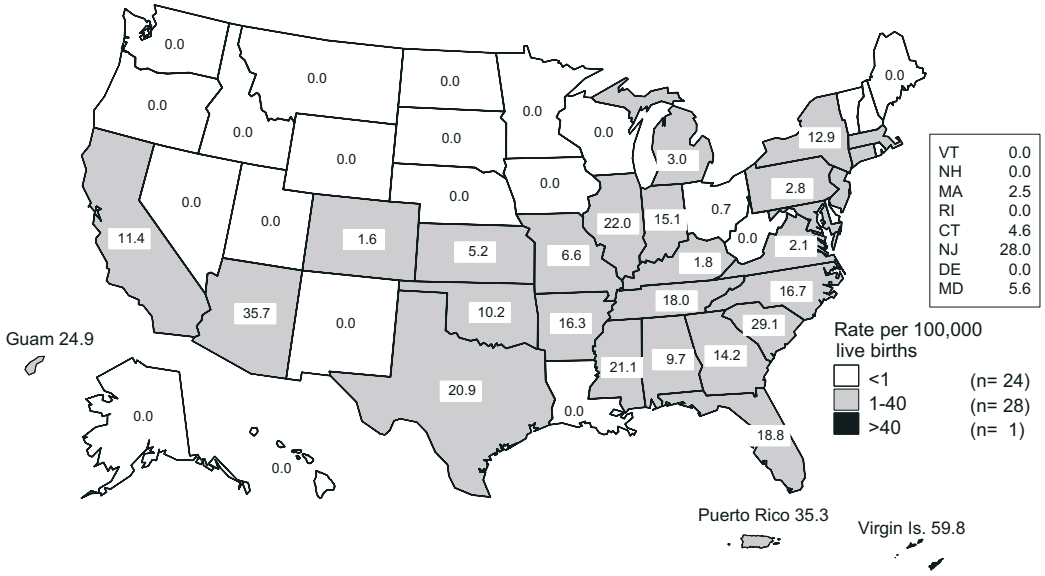
Note: The total rate of gonorrhea for women in the United States and outlying areas (including Guam, Puerto Rico and Virgin Islands) was 126.6 per 100,000 population. The Healthy People year 2010 objective is 19.0 per 100,000 population for women.

Figure C. Primary and secondary syphilis — Rates for women by state: United States and outlying areas, 2001



Note: The total rate of primary and secondary syphilis for women in the United States and outlying areas (including Guam, Puerto Rico and Virgin Islands) was 1.4 per 100,000 population. The Healthy People year 2010 objective is 0.2 per 100,000 population.

Figure D. Congenital syphilis — Rates for infants <1 year of age by state: United States and outlying areas, 2001



Note: The total rate of congenital syphilis for infants <1 year of age for the United States and outlying areas (including Guam, Puerto Rico and Virgin Islands) was 11.5 per 100,000 live births. The Healthy People year 2010 objective is 1.0 per 100,000 live births.

Figure E. Congenital syphilis — Cases by prenatal care utilization: United States, 1995-2001

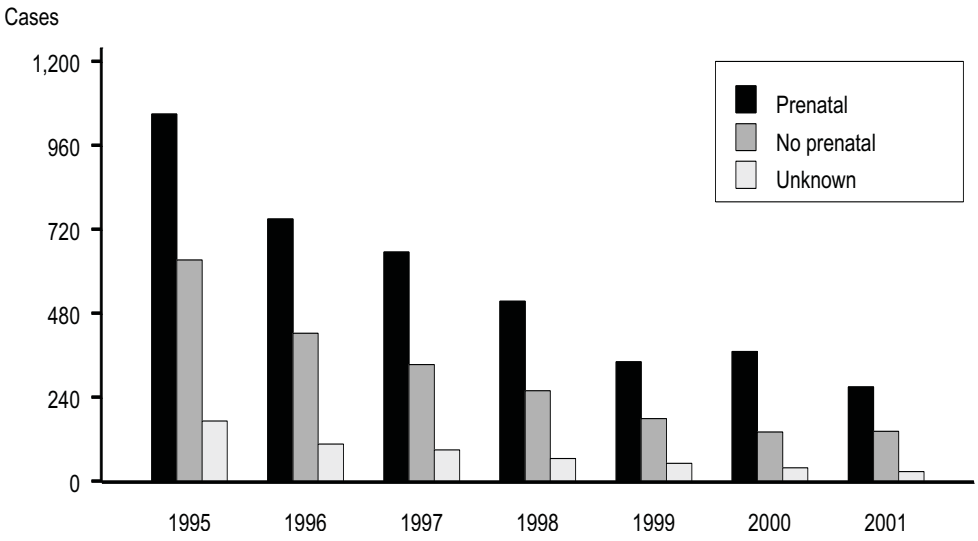
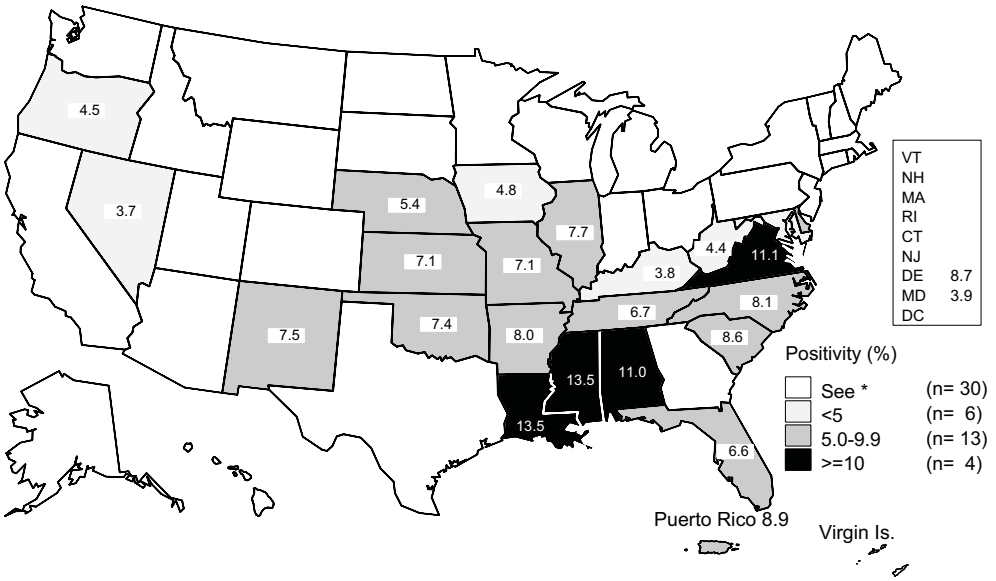


Figure F. Chlamydia — Positivity among 15-24 year old women tested in prenatal clinics by state: United States and outlying areas, 2001

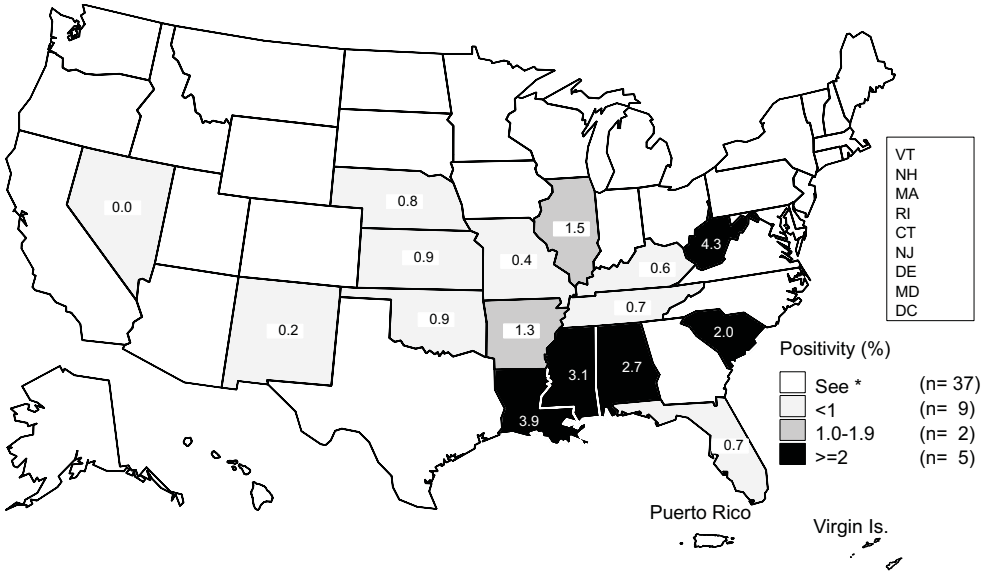


*States not reporting chlamydia positivity data in prenatal clinics.

Note: States reported chlamydia positivity data on at least 100 women aged 15-24 years during 2001.

SOURCE: Regional Infertility Prevention Program; Office of Population Affairs; Local and State STD Control Programs; Centers for Disease Control and Prevention

Figure G. Gonorrhea — Positivity among 15-24 year old women tested in prenatal clinics by state: United States and outlying areas, 2001

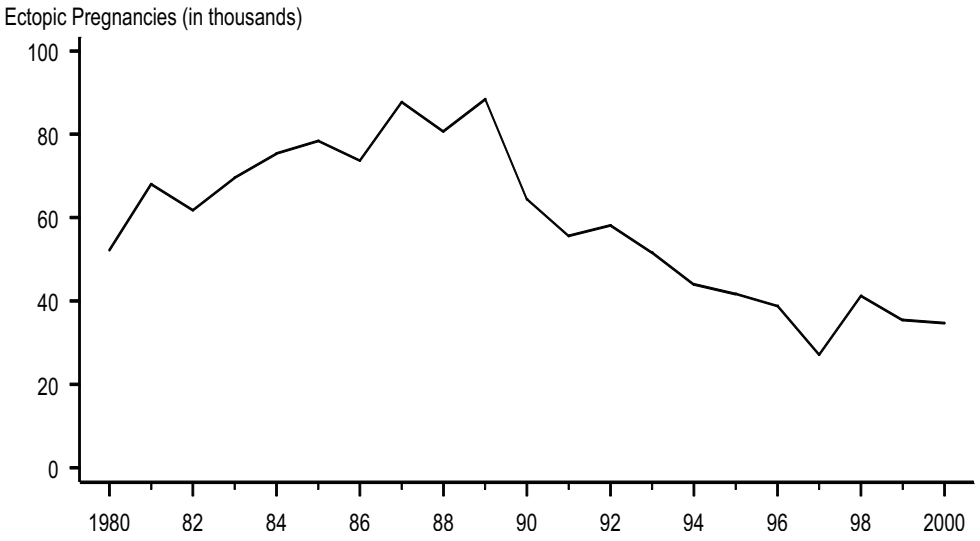


*States not reporting gonorrhea positivity data in prenatal clinics.

Note: States reported gonorrhea positivity data on at least 100 women aged 15-24 years during 2001.

SOURCE: Regional Infertility Prevention Program; Office of Population Affairs; Local and State STD Control Programs; Centers for Disease Control and Prevention

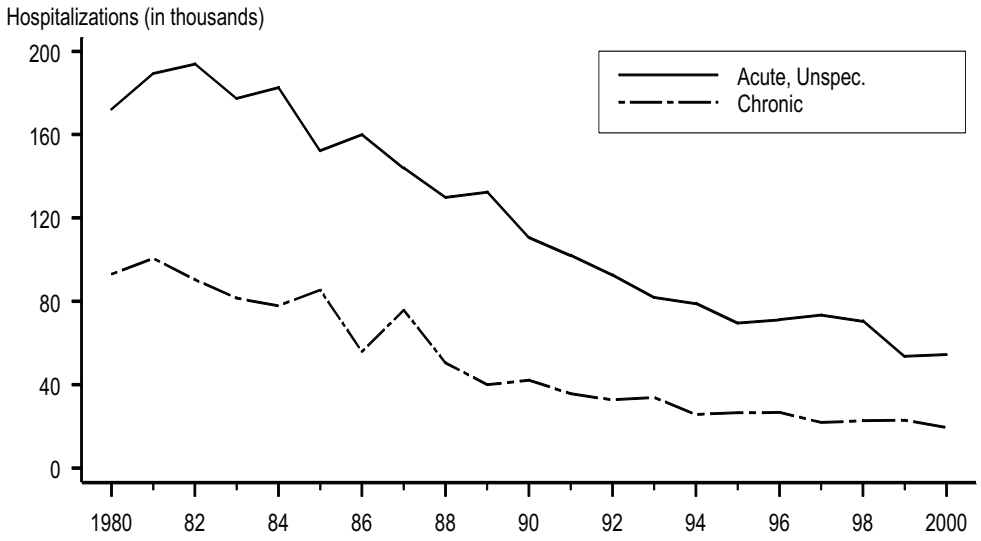
Figure H. Ectopic pregnancy — Hospitalizations of women 15-44 years of age: United States, 1980-2000



Note: Some variations in 1981 and 1988 numbers may be due to changes in sampling procedures. The relative standard error for these estimates ranges from 8% to 11%.

SOURCE: National Hospital Discharge Survey (National Center for Health Statistics, CDC)

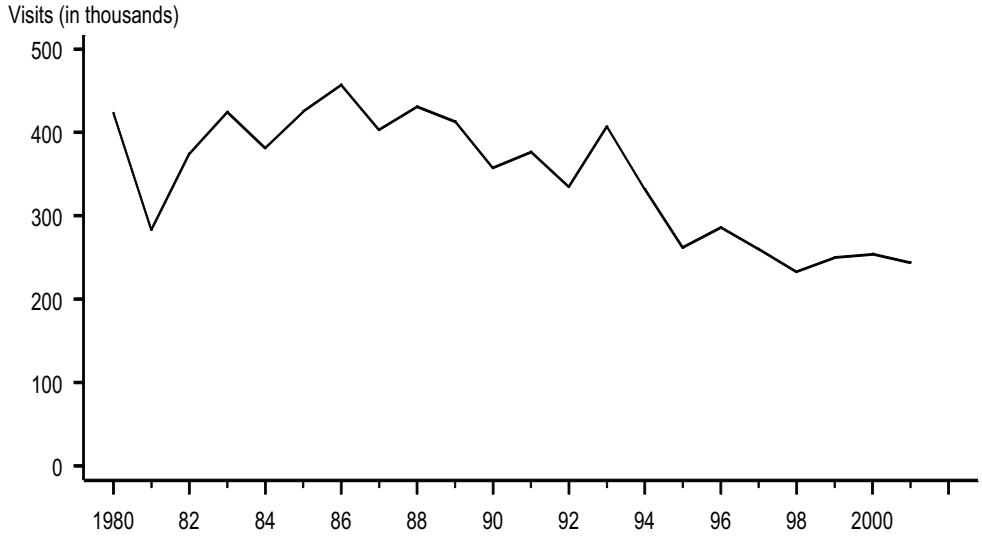
Figure I. Pelvic inflammatory disease — Hospitalizations of women 15-44 years of age: United States, 1980–2000



Note: The relative standard error for the estimates of the overall total number of PID cases range from 6% to 9%.

SOURCE: National Hospital Discharge Survey (National Center for Health Statistics, CDC)

Figure J. Pelvic inflammatory disease — Initial visits to physicians' offices by women 15-44 years of age: United States, 1980–2001



Note: See Appendix.

SOURCE: National Disease and Therapeutic Index (IMS America, Ltd.)